REMARKS

The Office Action dated March 7, 2006, has been received and carefully noted. The above amendments and the following remarks are submitted as a full and complete response thereto.

By this Amendment, claim 13 has been amended to correct a minor informality. No new matter has been added. The amendments to the claims do not narrow the scope of the claims. Claims 1, 2 and 11-18 are pending and respectfully submitted for consideration.

Entry of Response Proper

Entry of this Amendment is proper under 37 C.F.R. §1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issues requiring further search and/or consideration on the part of the Examiner as the Amendment merely clarifies the direction the projection of each ball holder extends; (c) satisfy a requirement of form asserted in the previous Office Action; (d) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (e) place the application in better form for appeal, should an appeal be necessary. The Amendment is necessary and was not earlier presented because it is made in response to objections raised in the Final Rejection. Entry of the Amendment is thus respectfully requested.

Rejections Under 35 U.S.C. § 103

Claims 1, 2, 12, 13 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Masahiro (Japanese Patent Publication No. 2000-339784) in view of

Sone (U.S. Patent No. 6,200,431 B1). Masahiro was cited for disclosing many of the claimed elements of the invention with the exception of an evacuation port being closer to the reactive gas supply source. Sone was cited for curing this deficiency. The Applicants traverse the rejection and respectfully submit that claims 1, 2, 12, 13 and 15 recite subject matter that is neither disclosed nor suggested by the cited references.

As a preliminary matter, the Applicants respectfully point out to the Examiner that independent claim 1 no longer recites "a main evacuation port for evacuating the vacuum chamber is disposed closer to the reactive gas supply source between both sources" as stated on page 4, lines 12-14 of the Office Action. This feature was deleted from the claims in the Response filed December 19, 2005.

The Applicants respectfully submit that Masahiro does not disclose or suggest additional features of the invention beyond those acknowledged in the Office Action. Claim 1 recites "a reactive gas supply source provided with a reactive gas introduction port and a reactive gas exhaust port" and "a main evacuation port evacuates the vacuum chamber together with the sputter gas and the reactive gas." The Office Action took the position that the main evacuation port and the reactive evacuation port are one and the same in Masahiro, and that the vacuum pump 2 of Masahiro teaches these limitations. In contrast, the vacuum pump 2 in Masahiro "exhausts the air in the vacuum chamber 1, and lowers a pressure". See paragraph [0019] of Masahiro. There is no disclosure or suggestion that the vacuum pump 2 in Masahiro has a reactive gas supply source provided with a reactive gas exhaust port, as recited in claim 1. As such, the Applicants respectfully submit that there is no comparable element in Masahiro to the claimed a reactive gas supply source provided with a reactive gas introduction port and a reactive gas exhaust port for exhausting a reactive gas.

Claim 1 also recites a shield means for preventing the reactive gas from remaining in the vicinity of a sputter target. The claimed "shield means" is written in means-plus-function format. Therefore, the shield means feature is governed by 35 U.S.C. § 112, sixth paragraph. Under U.S. patent practice, 35 U.S.C. § 112, sixth paragraph, a claim limitation expressed in means-plus-function language "shall be construed to cover the corresponding structure, material, or acts described in the Specification and equivalents thereof". Therefore, in order to teach a shield means, Masahiro must disclose the corresponding structure, material or acts of shielding described in the Specification of the present application. The Specification discloses a shield means as argon gas. In contrast, Masahiro discloses in paragraph [0032] that (I) the divider 10 is provided for the purpose of limiting the area of the sputtering thin film formation and that (II) the divider is provided between the cathode 4 and the nitrogen gas inlet 9. Masahiro does not disclose or suggest that the divider is a gas curtain. The Office Action took the position that the divider 10 in Fig. 6 of Masahiro is comparable to the shield means recited in claim 1. However, **the divider 10 is not a gas shield (of argon gas)** and therefore does not cover and is not equivalent to the material described in the Specification of the present application. As such, the Applicants respectfully submit that Masahiro does not teach a shield means as recited in claim 1.

With respect to independent claim 13, Masahiro also fails to disclose or suggest additional features of the invention beyond those acknowledged in the Office Action.

Claim 13, as amended, recites forming a gas curtain by the sputter gas flow shielding a sputter target from a reactive gas after evacuation of the chamber. In contrast, Masahiro does not disclose the claimed step of forming a gas curtain. Masahiro merely discloses the possible existence of a divider, element 10 which is not comparable to the gas curtain recited in claim 13. As such, the Applicants respectfully submit that Masahiro also fails to disclose additional features of the invention as recited in claim 13.

Sone was cited for teaching a main evacuation port for evacuating being disposed closer to the reactive gas supply source between both the sources. See page 4, lines 12-13 of the Office Action. However, as discussed above, claim 1 no longer recites this feature.

With respect to claim 1, Sone fails to cure the deficiencies in Masahiro. Specifically, claim 1 recites a main evacuation port evacuates the vacuum chamber together with the sputter gas and the reactive gas. The Office Action took the position that communicating opening 24 of Sone was comparable to the main evacuation port. However, Sone discloses that valves 27, 28 and 30 are opened to evacuate the inside of the reaction chamber, that sputter gas is exhausted from the first space through the communicating opening 25, and the reactive gas is exhausted from the second space through the communicating opening 26. As such, there is no main evacuation port that evacuates the vacuum chamber together with the sputter gas and the reactive gas. In contrast, in Sone, the sputter gas and the reactive gas are exhausted out of separate exhaust ports. Therefore, Sone fails to cure the deficiencies in Masahiro with respect to claim 1.

Further, Sone fails to cure the deficiencies in Masahiro with respect to claim 13 as Sone also fails to disclose or suggest at least the features of forming a gas curtain by the sputter gas flow shielding a sputter target from a reactive gas after evacuation of the chamber, as recited in claim 13.

Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Masahiro in view of Sone as applied to claims 1, 2, 12, 13 and 15 above, and further in view of Scobey et al. (U.S. Patent No. 4,851,095, "Scobey"). Masahiro and Sone were cited for disclosing many of the claimed elements of the invention with the exception of the thin film forming apparatus constructed as a film forming chamber with an in-line type film forming apparatus for fixed type film formation or passage type film formation. Scobey was cited for curing this deficiency. The Applicants traverse the rejection and respectfully submit that claim 11 recites subject matter that is neither disclosed nor suggested by the cited references.

Claim 11 depends from claim 1. The Applicants respectfully submit that Scobey fails to cure the deficiencies in Masahiro and Sone with respect to claim 1, as Scobey also fails to disclose or suggest at least the features of a main evacuation port that evacuates the vacuum chamber together with the sputter gas and the reactive gas, and a shield means for preventing the reactive gas from remaining in the vicinity of the sputter target. Therefore, the combination of Masahiro, Sone and Scobey fails to disclose or suggest each and every feature of the invention as recited in claim 1, and therefore, dependent claim 11.

Claim 14 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Masahiro in view of Sone as applied to claims 1, 2, 12, 13 and 15 above, and further in view of Kugler (U.S. Patent No. 5,292,417). Masahiro and Sone were cited for disclosing many of the claimed elements of the invention with the exception of the reactive gas flow rate being selected by a predetermined gas flow rate corresponding to the sputter gas flow rate. Kugler was cited for curing this deficiency. The Applicants traverse the rejection and respectfully submit that claim 14 recites subject matter that is neither disclosed nor suggested by the cited references.

Claim 14 depends from claim 13. The Applicants respectfully submit that Kugler fails to cure the deficiencies in Masahiro and Sone with respect to claim 13, as Kugler does not disclose or suggest at least the feature of forming a gas curtain by the sputter gas flow shielding a sputter target from a reactive gas after evacuation of the chamber. Therefore, the combination of Masahiro, Sone and Kugler fails to disclose or suggest each and every feature of the invention as recited in claim 13, and therefore, dependent claim 14.

Claims 16 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Masahiro in view of Sone as applied to claims 1, 2, 12, 13 and 15 above, and further in view of Hartsough (U.S. Patent No. 4,420,385). Masahiro and Sone were cited for disclosing many of the claimed elements of the invention with the exception of the thickness of the thin film. Hartsough was cited for curing this deficiency. The Applicants traverse the rejection and respectfully submit that claims 16 and 18 recite subject matter that is neither disclosed nor suggested by the cited references.

Claims 16 and 18 depend from claim 13. The Applicants respectfully submit that Hartsough fails to cure the deficiencies in Masahiro and Sone with respect to claim 13, as Hartsough fails to disclose or suggest at least the feature of forming a gas curtain by the sputter gas flow shielding a sputter target from a reactive gas after evacuation of the chamber. Therefore, the combination of Masahiro, Sone and Hartsough fails to disclose or suggest the features of the invention as recited in dependent claims 16 and 18.

Claim 17 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Masahiro in view of Sone and further in view of Kugler as applied to claims 1, 2, 12, 13, 14 and 15 above, and further in view of Hartsough. The Applicants traverse the rejection and respectfully submit that claim 17 recites subject matter that is neither disclosed nor suggested by the cited references.

Claim 17 depends from claim 13. The Applicants respectfully submit that Kugler and Hartsough fail to cure the deficiencies in Masahiro and Sone with respect to claim 13, as neither Kugler nor Hartsough disclose or suggest at least the feature of forming a gas curtain by the sputter gas flow shielding a sputter target from a reactive gas after evacuation of the chamber. Therefore, the combination of Masahiro, Sone, Kugler and Hartsough fails to disclose or suggest each and every feature of the invention as recited in claim 13, and therefore, dependent claim 17.

Under U.S. patent practice, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See M.P.E.P. § 2142. In this case, JP '303 does do not teach or suggest all the claim limitations.

Under U.S. patent practice, the PTO has the burden under §103 to establish a *prima facie* case of obviousness. In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Both the case law of the Federal Circuit and the PTO itself have made clear that where a modification must be made to the prior art to reject or invalidate a claim under §103, there must be a showing of proper motivation to do so. The mere fact that a prior art reference could arguably be modified to meet the claim is insufficient to establish obviousness. The PTO can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. Id. In order to establish obviousness, there must be a suggestion or motivation in the reference to do so. See also In re Gordon, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (prior art could not be turned upside down without motivation to do so); In re Rouffet, 149 F.3d 1350 (Fed. Cir. 1998); In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999); In re Lee, 277 F.3d 1338 (Fed. Cir. 2002). The Office Action restates the advantages of the present invention to justify the combination of references. There is, however, nothing in the applied references to evidence the desirability of these advantages in the disclosed structure.

In view of the above, the Applicant(s) respectfully submit(s) that the Office Action has failed to establish a *prima facie* case of obviousness for purposes of a rejection of claims 1, 2 and 11-18 under 35 U.S.C. §103.

Conclusion

The Applicants respectfully submit that claims 1 and 13 are allowable. Claims 2, 11, and 12 depend from claim 1 and claims 14-18 depend from claim 13. The Applicants further submit that each of these claims incorporate the patentable aspects thereof, and are therefore allowable for at least the same reasons as discussed above. Accordingly, the Applicants respectfully request withdrawal of the rejections, allowance of claims 1, 2 and 11-18 and the prompt issuance of a Notice of Allowability.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing Attorney Dkt. No. 101136-00098**.

Respectfully submitted,

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Enclosure: Petition for Extension of Time (one month)